REMARKS

Please reconsider the application in view of the following remarks.

Status of Claims

Claims 1-56 are pending in the present application.

As to the Merits

As to the merits of this case, the Examiner sets forth the following rejections:

Claims 1, 2, 7-18, 20-21, 29-30 and 32-56 were rejected under 35 U.S.C. 103(a) as being unpatentable over "CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER" by **Nousch et al.** in view of US Patent No. 5,717,598 to **Miyakawa et al.**

Claims 19, 22-28 and 31 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Nousch et al.** ("CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER") in view of US Patent No. 5,717,598 to **Miyakawa et al.** as applied to claim 1 above, and further in view of **Lilly et al.** (USPAP US 2005/0149219 Al).

Claims 3-6 were rejected under 35 U.S.C. 103(a) as being unpatentable over "CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER" by **Nousch et al.** in view

of US Patent No. 5,717,598 to **Miyakawa et al.** as applied to claim 1 above, and further in view of US Patent Application Publication No. US 2002/0184524 A1 to **Steele et al.**

Applicant respectfully traverses each of these rejections.

Claim Rejections - 35 U.S.C. §103

Independent Claims 1 and 46

A prima facie case of obviousness requires that the combination of the cited prior art, coupled with the general knowledge in the field, must provide all of the elements of the claimed invention.

Claim 1, is drawn to at least … *cooperation management means for associating assembly procedure data showing combination of the assembly enabled components and assembling order thereof with data for each of the plurality of component objects so that each of the component objects are configured for display in the virtual space, said cooperation management means managing the component objects ….* Claim 46 is drawn to an article of manufacture having similar features.

For example, as noted on page 36, last paragraph of the present specification, "[t]he cooperation management means 10 performs cooperative management **by associating the**

assembly procedure data stored in an assembly procedure data storage means D1 (see Fig.10 and Fig.11) and the space element data stored in a space element data storage means D2 (see Fig.8 and Fig.9) as corporative management data ...."

On page 3 of the Final Office Action, it is alleged that "Nousch discloses cooperation management means <u>for associating</u> assembly procedure data showing combination of the assembly enabled components <u>and</u> assembling order thereof with component object data for displaying the component in the virtual space as a component object and managing them - <u>taught by Nousch et al. (hereinafter referred to as "Nousch") as the knowledge database and explained in section 4.1 on page 117</u>."

Applicant respectfully submits that the Examiner has erred substantively as to the factual findings based on the teachings of Nousch. More specifically, Nousch, in section 4.1 on page 117, discloses a class closet that contains the structure of all virtual components, dependencies, and all construction rules modeled in the program. Board element exclusively manages the presentation of a closet's components (walls, shelves, door) inside the 3D workroom. It calculates the numerical shape descriptions of each component to build a virtual three-dimensional object. This class not only controls the appearance of the virtual objects concerning transparency, color, texture, etc. but also handles the user's manipulation of the virtual objects. For example, if a component is dragged and released inside the 3D-world this movement is

translated into an assembly command and sent to the closet class, which in turn decides what further actions to perform.

In other words, this information is only used in the generation of the assembly instructions. However, assembly instructions are <u>NOT</u> associated with the combination of assembly enabled components information and assembling order information. It (Board) merely calculates the numerical shape descriptions of each component and controls the appearance of the virtual objects concerning transparency, color, texture, etc. and also handles the user's manipulation of the virtual objects.

In contrast, in the claimed invention, cooperation management means <u>associates</u> assembly procedure data showing <u>combination</u> of the assembly enabled components <u>and</u> assembling order of the assembly enabled components with data for each of the component objects so that each of the component objects are configured for display in the virtual space (Figs. 8, 9, 10 and 11).

In view of the foregoing, Applicant submits that Nousch fails to disclose *cooperation management means for associating assembly procedure data showing combination of the assembly enabled components and assembling order thereof with data for each of the plurality of component objects so that each of the component objects are configured for display in the virtual*

space, said cooperation management means managing the component objects as recited in independent claims 1 and 46.

Independent Claims 1 and 46

Claim 1, also calls for ... *coordinate data acquisition means for acquiring coordinate data of each of the component objects arranged within the virtual space based on the received input from the user and displaying each of the component objects in the virtual space by the object display means....* Claim 46 is drawn to an article of manufacture having similar features.

For example, as noted on page 37, paragraph 3 of the present specification, the coordinate data acquisition means 12 acquires coordinate data of the object displayed in the virtual space by the object display means 11. For example, the coordinate data may be the data described in a world coordinate system or a local coordinate system in the virtual space.

As to the coordinate data acquisition means recited in claims 1 and 46, Applicant submits that the Examiner is mischaracterizing the teachings of Nousch. More specifically, Nousch teaches that navigation console that is capable of tabular presentation of the closet's size (height, width, depth etc.) and also has a capability of displaying a pictogram of a human figure along side of the closet in the virtual work room so that a user can get a virtual impression as to the relative size of the closet he/she custom designing.

In contrast, in the claimed invention, for example, the coordinate data acquisition means acquires the <u>coordinate data of the displayed component object</u>. In other words, the data acquisition means acquires the coordinate data (positional data) of the component object such as a closet and NOT the dimensional data such as size of the closet. That is, by way of coordinate data, the spatial relation between components is analyzed. In contrast, the dimensional data such as size of a closet, in Nousch, analyzes a component.

In view of the foregoing, it is submitted that Nousch also does not teach *coordinate data acquisition means for acquiring coordinate data of each of the component objects arranged within the virtual space based on the received input from the user and displaying each of the component objects in the virtual space by the object display means* as recited in claims 1 and 46.

Independent Claims 1 and 46

Claim 1 also calls for ... *element working time output means for outputting an element working time required for an assembly of one component object with other component object in the working space on the basis of a distance between these component objects arranged within the virtual space, said distance is computed from the acquired coordinate data, and assembly procedure data related to the objects and cooperatively managed by the cooperation means* Claim 46 is drawn to an article of manufacture having similar features.

Furthermore, on page 4 of the Final Office Action, it is acknowledged by the Examiner that Nousch does not teach the element working time output means as recited in claims 1 and 46.

Nonetheless the Office alleges that the newly cited prior art reference of Miyakawa remedies this deficit. In particular, the Office contends that Miyakawa teaches operations involved with the attachment of the parts. It defines degrees of difficulty/easiness that is involved with the attaching of parts, and classifies these factors so that the index indicating the degrees of easiness can be determined and finally estimating the attachment costs and time. Miyakawa further defines the estimation step by determining an assemblability evaluation score in accordance with the assembling time so that an attachment time can be calculated. Therefore, the Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the assemblability method in a virtual environment as taught by Miyakawa with the virtual production design facility of Nousch so as to formulate a working time for assembly of components based upon the distance of the attachable components within a working space so as to determine the manufacturability, i.e. level of difficulty, based upon time, distance and design information so that assemblability can be accomplished in a timely and accurate manner while limiting cost and delay as stated in column 1, lines 26-60.

However, it is to be noted that Miyakawa reference does not teach or suggest use of coordinate data to compute distance between components to be assembled. In particular,

Miyakawa does not have any teaching that can be construed as it having a structure that is a capable of outputting an element working time required for assembling of one component object with other component object in the working space on the basis of a distance between these component objects arranged within the virtual space where the distance is computed from the acquired coordinate data.

Since Miyakawa does not disclose coordinate data, it necessarily fails to disclose a *coordinate data acquisition means* as recited in claims 1 and 46. Furthermore, Miyakawa also does not disclose *cooperation management means* as recited in claims 1 and 46.

Therefore, neither Nousch nor Miyakawa, alone or in combination, discloses at least *cooperation management means for associating assembly procedure data showing combination of the assembly enabled components and assembling order thereof with data for each of the plurality of component objects so that each of the component objects are configured for display in the virtual space, said cooperation management means managing the component objects ...coordinate data acquisition means for acquiring coordinate data of each of the component objects arranged within the virtual space based on the received input from the user and displaying each of the component objects in the virtual space by the object display means; and element working time output means for outputting an element working time required for an assembly of one component object with other component object in the working space on the basis of a distance between these component objects arranged within the virtual space, said distance is*

computed from the acquired coordinate data, and assembly procedure data related to the objects and cooperatively managed by the cooperation means as recited in aforesaid independent claims.

Independent Claim 55

Claim 55, also calls for … *a verification information acquisition step that acquires verification information for verifying the deviation between the execution content and the production design content, from the execution content performed in the real space based on the production design content….*

The Examiner generalized statement that Nousch, in section 3.1 on page 15, teaches the verification information acquisition step as recited in claim 55.

Applicant submits that the Examiner is mischaracterizing the teaching of Nousch. Nousch merely teaches that size of boards such as height or depth can be altered during the design process, i.e., process in virtual space of Beaver (Figs. 3 and 4 of Nousch).

However, Nousch does not teach or disclose *a verification information acquisition step that acquires verification information for <u>verifying the deviation between the execution content and the production design content, from the execution content performed in the real space based on the production design content</u>*

Because the afore-cited references do not teach or suggest all of the claimed elements and limitations in independent claims 1, 46, and 55, Applicant respectfully submits that a person of ordinary skill in the art would not make the combination suggested by the Examiner as obvious and the resulting combination would not yield the invention in claims 1-56. Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. 103 be withdrawn.

Conclusion

The Claims have been shown to be allowable over the prior art. Applicant believes that this paper is responsive to each and every ground of rejection cited in the Office Action dated March 2, 2010, and respectfully requests favorable action in this application. The Examiner is invited to telephone the undersigned, applicant's attorney of record, to facilitate advancement of the present application.

If this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

/ROBERT Y RAHEJA/

Robert Y. Raheja
Attorney for Applicant
Registration No. 59,274
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

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